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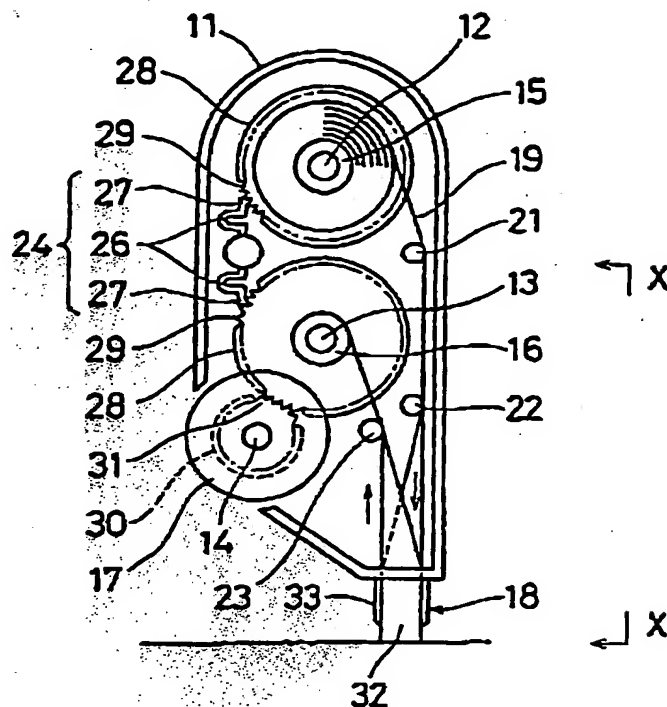
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(11) (21) (C) **2,091,996**
(86) 1992/07/24
(87) 1993/02/01
(45) 1999/10/05

(72) Tamai, Shigeru, JP
(73) Seed Rubber Company Ltd., JP
(51) Int.Cl.⁶ B43L 19/00
(30) 1991/07/31 (3/68371U) JP
(54) **DISPOSITIF DE TRANSFERT DE PELLICULE**
(54) **DEVICE FOR TRANSFERRING FILM**



(57) A coating film transfer tool having a construction to be used like a writing tool in a so-called lateral pulling use. The front end pressurizing part of the coating film transfer head is constituted so as to guide the coating film transfer tape almost oppositely to the gripping surfaces of the case, and the user holds the case main body in a position like a writing tool, and moves the case in the lateral direction on the sheet of paper, while pressing the coating film transfer tape tightly to the sheet of paper by the front end pressurizing part of the head, so that the coating films such as corrective paint layer and adhesive layer on the coating film transfer tape are transferred onto the sheet of paper.



ABSTRACT

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A coating film transfer tool having a construction to be used like a writing tool in a so-called lateral pulling use. The front end pressurizing part of the coating film transfer head is constituted so as to guide the coating film transfer tape almost oppositely to the gripping surfaces of the case, and the user holds the case main body in a position like a writing tool, and moves the case in the lateral direction on the sheet of paper, while pressing the coating film transfer tape tightly to the sheet of paper by the front end pressurizing part of the head, so that the coating films such as corrective paint layer and adhesive layer on the coating film transfer tape are transferred onto the sheet of paper.

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DEVICE FOR TRANSFERRING FILM

The present invention relates to a coating film transfer tool for transferring a coating film such as a corrective coating layer and an adhesive layer on a coating film transfer tape onto paper surface or the like.

As an example of this kind of coating film transfer tool, there has hitherto been known a tool for erasing characters or the like as disclosed in Japanese Laid-open Patent Publication No. 57370/1986. As seen from Fig. 6, this erasing tool comprises a case 1, two supporting shafts 2 and 3 embedded therein, which have set thereon a pay-out reel 5 with a coating film transfer tape 4 wound thereon and a winding reel 6 for winding a used coating film transfer tape 4 to be freely rotatable. A peak-shaped coating film transfer head 7 with a peak portion 8 projecting out of the case 1, and one end of the coating film transfer tape 4 fed from the pay-out reel 5 is led past a guide pin 9 and turned back by the peak portion 8 and wound by the winding reel 6. The winding reel 6 has fixed thereto a winding dial 10, a part of which is projecting out of the case 1 for manipulation. The coating film transfer tape 4 has a layer of white corrective paint formed on one side thereof over a release agent layer and a layer of adhesive thereupon, and is wound with the adhesive layer outward.

For erasing characters or the like by the use of the erasing tool of the above composition, the case 1 is held

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with both sides in a hand with the head 7 facing downward and, with the coating film transfer tape 4 being pressed against characters or the like to be erased by the peak portion 8 of the head 7, the case 1 is moved in the longitudinal direction (the direction of the arrow "a" in the figure). The corrective paint layer of the coating film transfer tape 4 is then pressed by the peak portion 8 onto the characters or the like, the corrective paint layer being released from the substrate film with the release agent layer and transferred thereon. As the case 1 moves, a new coating film transfer film 4 is fed from the pay-out reel 5 and, thus, the desired length of the corrective paint layer being transferred on the characters or the like for erasing thereof. The used substrate tape with only the adhesive agent layer remaining thereon is wound by the winding reel 6 with care lest it should slacken by means of the winding dial 10.

The prior art erasing tool described above, which had to be moved in the longitudinal direction of the coating film transfer tape 4 with both sides of the case 1 held with fingers, had something to be desired about stability and reliability since the elbow had to be lifted and there was a problem that it was difficult to set the peak precisely where erasing had to be done.

The present invention relates to improvement of the prior art erasing tool in which the case is moved perpendicular to the longitudinal direction of the coating film transfer tape so as to provide a coating film transfer

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tool with which erasing et cetera can be done stably and reliably.

In accordance with one aspect of one embodiment of the invention, there is provided a coating film transfer tool, comprising:

a case having a shape and size suitable for manipulating by holding by one hand and including gripping surfaces;

10 tape payout means provided in the case for paying out and feeding a coating film transfer tape;

tape pressurizing means projecting outwardly from a front end of the case, the tape pressurizing means for pressurizing the coating film transfer tape supplied from the tape payout means on to a transfer area, the tape pressurizing means including a front end pressurizing portion;

20 tape recovery means provided in the case for recovering the coating film transfer tape after use led through the front end pressurizing portion of the tape pressurizing means;

twisting means for twisting the coating film transfer tape between the head and both reels;

the pressuring portion oriented substantially opposite to the gripping surfaces of the case; and

wherein the front end pressurizing portion of the tape pressurizing means guides the coating film transfer tape substantially opposite to the gripping surfaces of the case.

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In accordance with a further aspect of one embodiment there is provided a coating film transfer tool, comprising:

a payout reel rotatably mounted in the case for holding the coating film transfer tape, the case including gripping surfaces;

a coating film transfer head, projecting from a front end of the case for pressurizing the coating film transfer tape paid out from the payout reel on to a transfer area, the head including a front end pressurizing portion and a winding reel, rotatably mounted in the case, for recovering the coating film transfer tape after use and led through the front end pressurizing portion of the head;

twisting means for twisting the coating film transfer tape between the head and both reels; and

the front end pressurizing portion of the head oriented relative to the case such that the portion guides the coating film transfer tape substantially oppositely to the gripping surfaces of the case.

20 In order to attain the above-mentioned object, the coating film transfer tool of the present invention comprises a pay-out reel having a coating film transfer tape wound thereon and a winding reel for winding used coating film transfer tape to be freely rotatable in a case and a peak-shaped head for coating film transfer at one end of the case, and so arranged that one end of the coating film transfer tape is fed from the pay-out reel and twisted by 90° ahead of the head and restored to the original state or further twisted by 90° after having passed the peak of
30 the head and then wound by the winding reel.

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In the coating film transfer tool of the above-mentioned construction, as a coating film transfer tape, for example, a substrate tape with a paint film formed on one side thereof over a release agent layer, and an adhesive layer formed thereon. In order to transfer the paint layer of the coating film transfer tape onto the paper surface, the coating film transfer tape, which passes the peak portion of the head, with it being twisted by 90°, the case has to be moved in a direction perpendicular to the longitudinal direction of the coating film transfer tape with the tape being pressed against the paper surface or the like by the peak portion of the head. It is thereby possible that the coating film of the paint coating film transfer tape under the peak portion of the head is stuck to the paper surface, at the same time, being released from the substrate tape. As the case moves, a new coating film transfer tape is fed from the pay-out reel and it is supplied to the peak portion of the head after being twisted by 90° on this side of the head. Thus, the desired length of the paint layer of the coating film transfer tape is transferred onto the paper surface or the like. The used substrate tape with the release layer alone remaining thereon is wound by the winding reel with the twisting restored.

If, as another example of the coating film transfer tape, an adhesive agent layer alone is formed on one side of the substrate tape over a release agent layer, the adhesive agent layer alone is transferred onto the paper

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surface or the like and, in this way, the present invention may be used as a pasting tool.

Having thus described the invention, reference will now be made to the accompanying drawings illustrating preferred embodiments and in which:

Fig. 1 is a front view of an embodiment of the present invention with the lid removed;

Fig. 2 is a sectional view taken along the line X-X of Fig. 1;

Fig. 3 is a front view of another embodiment of the invention with a portion thereof cut off;

Fig. 4 is a sectional view taken along the line Y-Y of Fig. 3;

Fig. 5 is a front view of a clutch arm of the above-mentioned another embodiment; and

Fig. 6 is a front view of an example of prior-art coating film transfer tool with the lid removed.

Similar numerals in the figures denote similar elements.

Described below is an embodiment of the present invention with reference to Figs. 1 and 2.

As seen from Figs. 1 and 2, three supporting shafts 12, 13, 14 embedded in a case 11 support freely rotatable thereon a pay-out reel 15, a winding reel 16 and a winding dial 17 and at the front end of the case 11 there is provided a projecting coating film transfer head 18, and

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the pay-out reel 15 has wound thereon a coating film transfer tape 19.

The case 11 has formed therein slits 20 through which the coating film transfer tape 19 passes at the base of the head 18 on both sides thereof (See Fig. 2.), three guide pins 21, 22, 23 and ratchet arm 24 are provided and the side opening is closed by the lid 25 (See Fig. 2.).

10 Case 11 has gripping surfaces 11' substantially opposite to the transfer head 18.

Ratchet arm 24 has stopper claws 27 formed at the ends of a pair of elastic arms 26, these stopper claws 27 are engaged with claws 29 of two ratchet wheels 28 described later freely disengageable by the elasticity of the elastic arms 26 to prevent free rotation of the pay-out reel 15 and the winding reel 16.

20 The pay-out reel 15 and winding reel 16 have formed monoblock therewith the ratchet wheels 28 having a multiplicity of the claws 29. The winding dial 17 has formed monoblock therewith a ratchet wheel 30 and a multiplicity of claws 31 formed on the outer periphery of the ratchet wheel 30 are engaged with the claws 29 of the ratchet wheel 28 of the winding reel 16.

The head 18 is peak-shaped as shown in Fig. 2 and is made up of a triangle-sectioned peak portion 32 with guide
30 flanges 33 formed on both sides thereof.

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The coating film transfer tape 19 has one end thereof fed before use from the pay-out reel 15 via the guide pin 21, is twisted by 90° by the guide pin 22 ahead of the head 18 to be led out through one slit 20 and then past the peak portion 32 of the head 18 through the other slit 20 into the case 11 and, with the twisting restored before it reaches the guide pin 23, is wound on the wind reel 16. Then, needless to say, it is to be so set that the coating film to be transferred should be on the outside of the loop.

The twisted tape may as well be further twisted by 90° instead of being restored to the original state.

When the coating film transfer tool of the above-mentioned construction is used as an eraser of characters or the like, the coating film transfer tape 19 may, for example, be made by forming, on one side of a substrate film (25-38 μm) of plastic such as polyester film and acetate film a release agent layer of, for example, vinyl chloridevinyl acetate copolymer and low-molecular polyethylene, a white corrective paint layer thereon and an adhesive agent (pressure-sensitive adhesive agent) such as polyurethane on top thereof.

In order to erase characters or the like with this coating film transfer tape 19, the coating film transfer tape 19 passes the peak portion 32 of the head 18 with being twisted by 90°, hence the case 11 has to be moved in

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a direction perpendicular to the longitudinal direction of the coating film transfer tape 19 (the direction of the arrow A in Fig. 2) with the adhesive layer side of the coating film transfer tape 19 being pressed against characters or the like by the peak portion 32. Then, the corrective paint layer of the coating film transfer tape 19 is stuck onto characters or the like by the adhesive agent layer and it is released from the substrate film by means of the release agent layer formed thereon. As the case 11 moves, a new coating film transfer tape 19 is fed from the pay-out reel 15. Then, the tension of the coating film transfer tape 19 acts on the pay-out reel 15 as torque, the stopper claws 27 are disengaged from the claws 29 of the ratchet wheel 28 by the elasticity of the elastic arm 26, this allows rotation of the pay-out reel 15. Thus, the corrective paint layer is transferred onto characters or the like for erasing thereof.

The used substrate tape with the release agent layer alone remaining thereon is wound without slack by the winding reel 16 which is driven to rotate by the winding dial 17 through the claws 29, 31 of both ratchet wheels 28, 30 in engagement. In this case, as in the case of feeding, the stopper claws 27 are disengaged from the claws 29 of the ratchet wheel 28 by the elasticity of the elastic arm 26, this allowing rotation of the winding reel 16.

When the coating film transfer tool of the above construction is used as a pasting tool, a substrate tape with an adhesive layer alone formed over a release agent

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layer on one side thereof is to be used instead of the coating film transfer tape 19. The adhesive layer alone is then transferred onto the paper surface in the same manner as in the case of the erasing tool described above to enable pasting.

Although in this embodiment the used coating film transfer tape 19 is wound by the winding reel 16 manually, it is also possible to do it automatically as shown in Figs. 3-5. In Figs. 3-5, however, like parts shown in Figs. 1 and 2 are to be designated by like symbols.

In this embodiment, as shown in Figs. 3 and 4, a pay-out reel 41 and a winding reel 42 are supported free to rotate on the supporting shafts 12 and 13 embedded in the case 11. The pay-out reel 41 is made up of a rim 44 with a large gear 43 formed on its outer periphery, a center boss 45, four radial spokes 46 connecting the rim and the boss and the pay-out cylinder 47 set on the outer periphery of the boss 45 free to rotate, and the coating film transfer tape 19 wound on the outer periphery of the pay-out cylinder 47. The boss 45 is made up of an inner cylinder 48 and outer cylinder 49 with a given gap therebetween, the base end of the outer cylinder 49 connected with the inner cylinder 48 and the supporting shaft 12 inserted through the through hole of the inner cylinder 48 free to rotate.

On the side wall of the outer cylinder 49, as shown in Fig. 5, there are formed a pair of clutch arms 51 having clutch claws 50 at its forward end and the clutch claws 50

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are engaged disengageably by the elasticity of the clutch arm 51 with a plurality of claws 52 formed annularly on the forward inner periphery of the pay-out cylinder 47.

Between confronting pairs of spokes 46, there are formed a pair of arc-shaped ratchet arms 54 having stopper claws 53 at a forward end, the stopper claws 53 engaged with a plurality of claws 55 formed annularly on the inside of the case 11 freely disengageable by the elasticity of the ratchet arm 54. This prevents free rotation of the pay-out
10 reel 41 and the winding reel 42.

Meanwhile, the winding reel 42 is made up of a tape-guiding flange 57 on the base end of the winding cylinder 56 with the used coating film transfer tape 19 wound on its outer periphery and a small gear 58 on the back of the flange 57 engaging with the large gear 43, and a supporting shaft 13 is set freely rotatable through the through hole of the winding cylinder 56.

20 When, in the above-mentioned makeup, the coating film transfer tape 19 is fed from the pay-out reel 41, the tension of the coating film transfer tape 19 acts as a torque on the pay-out reel 41 and the stopper claw 53 is disengaged from the claw 55 by the elasticity of the ratchet arm 54, this allows rotation of the pay-out reel 41. Hence, the pay-out reel 41 rotates the winding reel 42 via the large and small gears 43, 58, and the used coating film transfer tape 19 is wound by the winding reel 42 automatically. The pay-out speed decreases when the outer
30 diameter of the coating film transfer tape 19 on the pay-

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out reel 41 becomes smaller as the tool is used, however, the winding speed increases with the outer diameter of the coating film transfer tape 19 on the winding reel 42 getting larger. If this is allowed to continue, the coating film transfer tape 19 is bound to break in time, hence the pay-out speed has to be synchronized with the winding speed.

Hence, as the torque acting on the pay-out reel 41 increases, the clutch claws 50 are disengaged from the claws 52 by the elasticity of the clutch arm 51 and the pay-out speed is synchronized with the winding speed with the pay-out cylinder 47 sliding against the outer cylinder 49. Thus, the used coating film transfer tape 19 is smoothly wound automatically.

Needless to say, however, the sliding mechanism is not limited to that described above.

Since in this invention, as described above, the coating film transfer tape is twisted ahead of the head by 90°, the direction of movement of the coating film transfer tool is perpendicular to the longitudinal direction of the coating film transfer tape. Hence, with both sides of the tool held in a hand, it is possible to do erasing or adhesive coating by moving the tool horizontally with the elbow on the desk top or the like, that is, without lifting the elbow, and therefore, the head of the tool can be located to the desired position accurately and stably.

Also, according to the present invention, coupled with the

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prior art, the tool can be worked in two alternative directions, this allowing the operator to have a broader choice of mode of working and giving the diversity to the coating film transfer tool.

Although embodiments of the invention have been described above, it is not limited thereto and it will be apparent to those skilled in the art that numerous modifications form part of the present invention insofar as they do not depart from the spirit, nature and scope of the claimed and described invention.

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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A coating film transfer tool, comprising:
a case having a shape and size suitable for manipulating by holding by one hand and including gripping surfaces;

tape pay-out means provided in said case for paying out and feeding a coating film transfer tape;

tape pressurizing means projecting outwardly from a front end of said case, said tape pressurizing means for pressurizing said coating film transfer tape supplied from said tape pay-out means on to a transfer area, said tape pressurizing means including a front end pressurizing portion;

tape recovery means provided in said case for recovering said coating film transfer tape after use led through said front end pressurizing portion of said tape pressurizing means;

twisting means for twisting said coating film transfer tape between said head and both reels;

said pressuring portion oriented substantially opposite to said gripping surfaces of said case; and

wherein said front end pressurizing portion of said tape pressurizing means guides said coating film transfer tape substantially opposite to said gripping surfaces of said case.

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2. A coating film transfer tool, comprising:
a pay-out reel rotatably mounted in said case for holding said coating film transfer tape, said case including gripping surfaces;

a coating film transfer head, projecting from a front end of said case for pressurizing said coating film transfer tape paid out from said pay-out reel on to a transfer area, said head including a front end pressurizing portion and a winding reel, rotatably mounted in said case, for recovering said coating film transfer tape after use and led through said front end pressurizing portion of said head;

twisting means for twisting said coating film transfer tape between said head and both reels, and

said front end pressurizing portion of said head oriented relative to said case such that said portion guides said coating film transfer tape substantially oppositely to said gripping surfaces of said case.

3. The coating film transfer tool of claim 2, wherein said head has a portion and a front edge, said front edge of said peak portion having a triangular section comprising said front end pressurizing portion.

4. The coating film transfer tool of claim 2, wherein said case has a shape and size suitable for holding and manipulating by one hand, and is formed as a flat box having a contour shape, and size and width for accommodating said pay-out reel and said winding reel, said gripping surfaces comprising flat face and back sides of said case.

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5. The coating film transfer tool of claim 2, wherein said coating film transfer tape paid out from said pay-out reel is twisted by said twisting means 90 degrees in advance of said head, and restored to an original state by said twisting means after passing through said front end pressurizing part of said head, and taken up on said winding reel.

6. The coating film transfer tool of claim 2, wherein said coating film transfer tape comprises:

- a base film;
- a release agent layer on one side of said base film, forming a white corrective paint layer thereon; and
- a further layer of pressure sensitive adhesive.

7. The coating film transfer tool of claim 2, further including a winding dial having a circumference engaged with said winding reel, said dial rotatably supported in said case, a part of said circumference for a winding operation, said part opposite to an outside part of said case, and for use in manual winding.

8. The coating film transfer tool of claim 7, further including rotation preventive means for preventing free rotation of both reels, said rotation preventive means comprising ratchet arms inside said case, and ratchet wheels provided on both reels for detachable engagement with said ratchet arms.

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9. The coating film transfer tool of claims 1 or 2, wherein both reels are engaged with each other, and said winding reel is interlocked with said pay-out reel in automatic winding.

10. The coating film transfer tool of claim 9, further including rotation preventive means for preventing free rotation of both reels, said rotation preventive means comprising a claw unit having a plurality of stopper claws on an inner side of the case, and ratchet arms disposed on said pay-out reel for detachable engagement with said claw unit.

11. The coating film transfer tool of claim 9, further including sliding means for synchronizing pay-out speed of said pay-out reel and winding speed of the winding reel.

12. The coating film transfer tool of claim 11, wherein a boss of said pay-out reel is rotatably supported on a supporting shaft provided in said case, a pay-out cylinder for holding said coating film transfer tape is rotatably provided on the outer circumference of the boss, and the sliding means is interposed between the pay-out cylinder and the boss.

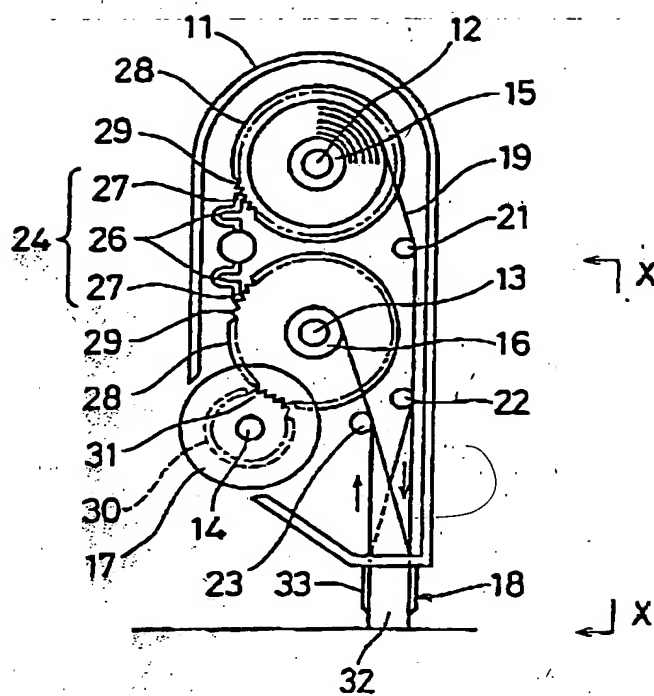
13. The coating film transfer tool of claim 12, wherein said sliding means comprises clutch arms provided on the outer circumference of said boss, and a claw unit having a plurality of stopper claws provided on the entire inner circumference of said pay-out cylinder whereby said clutch arms and said claw unit are engaged with each other elastically and detachably.

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FIG. 1

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FIG. 2

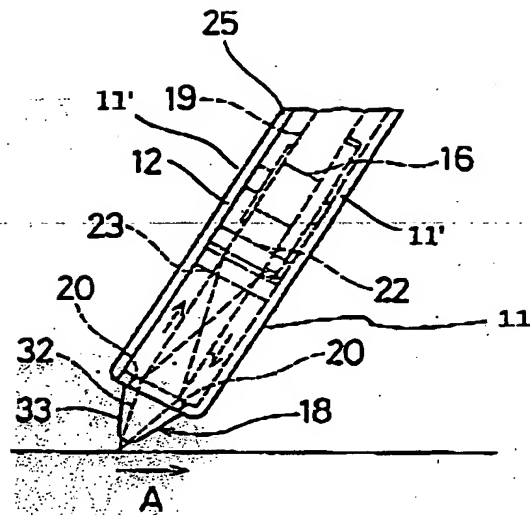


Fig. 1 is a cross-sectional view of a mechanical assembly, likely a pump or motor. The diagram shows a central shaft (18) passing through a housing (25). The assembly includes a rotor (11) with a central shaft (12) and a stator (13). The rotor has a central shaft (12) and a stator (13). The assembly is shown in a cross-sectional view, with a dashed line indicating a section line Y-Y. The diagram is labeled with various numbers: 18, 25, 19, 11, 43, 44, 46, 47, 54, 53, 55, 52, 50, 42, 13, 56, 57, 58, 12, 41, 48, 49, and 45.

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FIG. 4

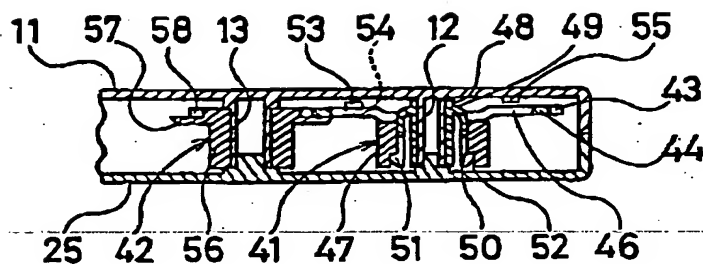
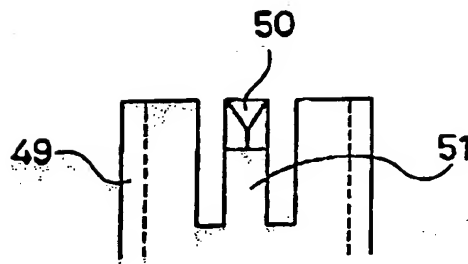


FIG. 5



Frank & Clark

